SEGMENTATION OF LEFT VENTRICULOGRAMS USING BOOSTED DECISION TREES

Abstract of the Disclosure

An automated method for determining the location of the left ventricle at user-selected end diastole (ED) and end systole (ES) frames in a contrast-enhanced left ventriculogram. Locations of a small number of anatomic landmarks are specified in the ED and ES frames. A set of feature images is computed from the raw ventriculogram gray-level images and the anatomic landmarks. Variations in image intensity caused by the imaging device used to produce the images are eliminated by de-flickering the image frames of interest. Boosted decision-tree classifiers, trained on manually segmented ventriculograms, are used to determine the pixels that are inside the ventricle in the ED and ES frames. Border pixels are then determined by applying dilation and erosion to the classifier output. Smooth curves are fit to the border pixels. Display of the resulting contours of each image frame enables a physician to more readily diagnose physiological defects of the heart.